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| 10/663,099 | 09/15/2003 | Jyrki Mikkola | 02709/000N207-US0 | 1637 |
| 7278 | 7590 | 12/06/2004 | EXAMINER | |
| DARBY & DARBY P.C. P. O. BOX 5257 NEW YORK, NY 10150-5257 | | | DINH, TRINH VO | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2821 | |

DATE MAILED: 12/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/663,099

Applicant(s) 

MIKKOLA ET AL.

Examiner

Trinh Vo Dinh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7 and 9-12 is/are rejected.
- 7) ☒ Claim(s) 5-6, 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09/15/03, 01/05/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. In the Information Disclosure Statement filed 01/05/2004, the Examiner has crossed out the Europe Search Report listed under Non Patent Literature Documents because the report is not qualified for a reference. However, the references listed under the report have been considered by the Examiner.

Claim Objections

2. Claims 2-11 are objected to because of the following informalities:

In claims 2-11, "An" should be changed to --The--.

In claim 3, line 2, "the physical length" should be changed to --the electrical length-- in order to agree with the support in the specification.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claims 1-3 and 12 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Pankinaho (US Patent 6,140,966).

With respect to claims 1 and 12, Pankinaho discloses, in Figs. 7-8 and 12a-12b, an internal planar antenna for a radio apparatus (210 in Fig. 9) comprising a ground plane (140 in Fig. 2), radiating plane (100), a feed conductor (110') for the latter, and a short-circuit conductor (131', col. 7, lines 1-11) which connects the radiating plane to the ground plane at a short-circuit point (Fig. 8), the ground plane (140) including at least one non-conductive slot (141 in Fig. 12a) to improve matching of the antenna, a starting point of the slot being in an edge of the ground plane.

With respect to claim 2, Pankinaho discloses, in Fig. 12a, the ground plane being a conductive layer on the upper surface of a circuit board (160, col. 7, lines 20-25) in the radio apparatus, and the radiating plane being a conductive plane above the ground plane (col. 7, lines 20-25) and having an outline shaped substantially like a rectangle (Fig. 12a), wherein said short-circuit point (130 in Fig. 12a) is located relatively close, in proportion to the lengths of the sides of the radiating plane (100), to a projection of a corner of the radiating plane in the circuit board, and said starting point of the slot (141) is located relatively near the short-circuit point and travels substantially parallel to a long side of the radiating plane.

With respect to claim 3, Pankinaho discloses the slot (141) in the ground plane (140) increasing the electrical length of the ground plane as measured from the short-circuit point.

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5. Claims 1-4, 9-10 and 12 are rejected under 35 U.S.C. 102(a) as being anticipated by Avantego (WO 01/89031 A).

With respect to claims 1 and 12, Avantego discloses, in Figs. 1-2, an internal planar antenna (10) for a radio apparatus (page 1, lines 15+) comprising a ground plane (12), radiating plane (11), a feed conductor (13) for the latter, and a short-circuit conductor (14) which connects the radiating plane to the ground plane at a short-circuit point (Fig. 5), the ground plane (12) including at least one non-conductive slot (121, 122) to improve matching of the antenna, a starting point of the slot being in an edge of the ground (12).

With respect to claim 2, Avantego discloses the ground plane (12) being a conductive layer on the upper surface of a circuit board (page 5, lines 30-32) in the radio apparatus, and the radiating plane being a conductive plane (11) above the ground plane (12 in Fig. 2) and having an outline shaped substantially like a rectangle (Fig. 1), wherein said short-circuit point (in Fig. 5) is located relatively close, in proportion to the lengths of the sides of the radiating plane (11), to a projection of a corner of the radiating plane in the circuit board (18 in Fig. 4), and said starting point of the slot (121) is located relatively near the short-circuit point and travels substantially parallel to a long side of the radiating plane (Fig. 1)

With respect to claim 3, Avantego discloses the slot (121) in the ground plane (12) increasing the electrical length of the ground plane as measured from the short-circuit point.

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With respect to claim 4, Avantego discloses the antenna having at least a lower and an upper operating band, wherein the ground plane (12) includes a first and a second non-conductive slot (121, 122).

With respect to claim 9, Avantego discloses said slot (121, 122) in the ground plane (12) being arranged to resonate in the upper operating band of the antenna.

With respect to claim 10, Avantego further discloses, in Fig. 1 the second slot (122) starting from an edge of the ground plane (12), which is opposite to that edge from which the first slot (121) starts.

6. Claims 1-4, and 9-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Maoz et al (US 2004/012529 A1).

With respect to claims 1 and 12, Maoz discloses, in Figs. 1, 5a, 6a and 7a, an internal planar antenna (10) for a radio apparatus (paragraph [0030]) comprising a ground plane (51 in Fig. 5a), radiating plane (10), a feed conductor (7, 17) for the latter, and a short-circuit conductor (8+9, 18+19) which connects the radiating plane to the ground plane at a short-circuit point (7, paragraph [0034]), the ground plane (51) including at least one non-conductive slot (53a, 53b) to improve matching of the antenna, a starting point of the slot being in an edge of the ground (4).

With respect to claim 2, Maoz discloses the ground plane being a conductive layer on the upper surface of a circuit board (paragraph [0030]) in the radio apparatus, and the radiating plane (51) being a conductive plane above the ground plane (4, Figs. 1 and 5a) and having an outline shaped substantially like a rectangle (Fig. 5a), wherein said short-circuit point (7, 17) is located relatively close, in proportion to the lengths of the sides of the radiating plane (51), to a projection of a corner of the radiating plane

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(51) in the circuit board (4), and said starting point of the slot (53a) is located relatively near the short-circuit point and travels substantially parallel to a long side of the radiating plane (51).

With respect to claims 3-4, Maoz discloses the slot (53a) in the ground plane (51) increasing the electrical length of the ground plane as measured from the short-circuit point, and the antenna having at least a lower and an upper operating band (paragraph [0017]), wherein the ground plane (51) includes a first and a second non-conductive slot (53a, 53b).

With respect to claim 9, Mao discloses at least a lower and an upper operating band ([0017]), said slot (53a, 53b) in the ground plane being arranged to resonate in the upper operating band of the antenna.

With respect to claims 10 and 11, Maoz further discloses the second slot (53b) starting from an edge of the ground plane (51) which is opposite to that edge from which the first slot (53a) starts, and at least one slot (53a) in the ground plane including a portion (the long portion of 53a) the direction of which differs substantially from the direction of the long side of the radiating plane

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pankinaho (US Patent 6,140,966) or Maoz et al (US 2004/012529 A1) in view of Schiavone (US Patent 4,367,475).

Pankinaho or Maoz discloses every feature of the claimed invention except a capacitor. Schiavone discloses, in Figs. 1 and 1a, a capacitor (28) being connected across a slot (10). . It would have been obvious to one having ordinary skill in the art at the time the invention was made to connect a capacitor across the slot as taught by Schiavone in order to improve resonant characteristics of the antenna structure.

Allowable Subject Matter

9. Claims 5-6 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

The cited art of record fails to teach the second slot starting from the same edge of the ground plane as the first slot and traveling substantially parallel to the first slot and said feed point being located between the first and second slots on the circuit board.

Inquiry

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trinh Vo Dinh whose telephone number is (571) 272-1821. The examiner can normally be reached on Monday to Friday from 9:30AM to 6:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong, can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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A handwritten signature in black ink, appearing to read 'Trinh Vo Dinh', with a long horizontal flourish extending to the right.

*Trinh Vo Dinh
November 24, 2004*